



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/562,802

11/15/2006

Rolf Cremerius

66969-0003

6136

84362 7590 07/12/2010

GKN Driveline/TTG

c/o Kristin L. Murphy

39533 Woodward Avenue, suite 140

Bloomfield Hills, MI 48304

EXAMINER

JENNISON, BRIAN W

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

07/12/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,802	Applicant(s) CREMERIUS ET AL.	
	Examiner BRIAN JENNISON	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2, 14, 16, 18 and 20-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 14, 16, 18 and 20-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/29/2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2, 14, 16, and 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke et al (US 5,211,327) in view of Brenner et al (US 6,365,866) and Araki et al (US 4,020,312).

Clarke discloses regarding claim 2 a process for joining components for torque transmission in a vehicle, the components being made from hardenable steel and having a material thickness, (A method for welding hardenable steel which can be components in a torque transmission. See Col. 2, Line 35 and Fig. 2 for material thickness at 26) by producing a weld seam without secondary heating, (no preheating or

Art Unit: 3742

secondary heating is needed. See Column 4, Lines 46-51) comprising: positioning a welding electrode with respect to a weld line; applying a voltage; supplying a plasma gas; forming an arc; and (A plasma arc, using a plasma gas, is formed after an electrode is positioned and a voltage is applied. See Column 1, Lines 20-23) melting the steel in the vicinity of the weld line over the entire material thickness. (Melting occurs in the vicinity of the weld line. See Column 1, Lines 24-28.) An energy per unit length of a 4.5kW power beam is 196 J/mm at 1.4m/min as stated by applicant in the reply filed 6/3/2009, meaning 1kW/mm = 43.55 J/mm. Fig 4 shows the steel being melted to slot 126 which covers the entire thickness of the material. Clarke fails to teach regarding claim 2, energy per unit length is 234 J/mm to 3360 J/mm and the steel thickness being 2.0 mm to 10.0 mm. Brenner teaches regarding claim 2, the parts have a 3.0 mm thickness(See Column 4, Lines 1-5). Araki et al teaches regarding claim 2, a welding current of 1500A and an arc voltage 36V for a power of 54kW at 300mm – 1500mm per minute for an energy per unit length of 2351.7 J/mm at 1.4m/min. ($P=IV$ and $54kW \times 43.55J/mm$) See Column 22, lines 40-45. It would have been obvious to adapt Clarke in view of Brenner and Araki to provide the welding energy and the material thickness since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. (In re Aller, 105 USPQ 233.) Clarke discloses regarding claim 14, Fig 4 shows the weld joint to be a single layer design. Clarke discloses regarding claim 16, a butt seam may be welded in the metal. See Column 1, Lines 55-57. Clarke disclose regarding claim 18, Welding was performed at a rate of 1.4m/minute, which is

Art Unit: 3742

at least 0.2 m/min. Clarke disclose regarding claim 20, The weld seam 114 shown in Fig 3. is a radial circumferential seam, around the gear 112. Clarke disclose regarding claim 21 as best understood, Clarke disclose regarding claims 22-23, The weld seam is made between a gear 112 and a shaft 116 (See Column 8, Lines 60-65) which are included in the parts of a torque transmission welded by the method involving no secondary heating, (See Column 4, Lines 46-51) when a plasma arc is formed after an electrode is positioned and a voltage is applied. (See Column 1, Lines 20-23) Melting occurs in the vicinity of the weld line. (See Column 1, Lines 24-28.) Clarke discloses regarding claim 24, Cracks in the weld seam are inhibited from forming in the hardenable steel pieces. See Column 3, Lines 27-31. Clarke discloses regarding claim 25, Cracks in the weld seam are inhibited from forming in the hardenable steel pieces. See Column 3, Lines 27-31. Clarke fails to disclose regarding claim 26, a join comprising ductility in the range from 250HV to 650HV. Brenner discloses regarding claim 26, the welding seam has an average hardness of 280HV. See Column 4, Lines 55-68. It would have been obvious to adapt modified Clarke in view of Brenner to provide the ductility of 280HV for inhibiting cracks in the weld.

4. Claims 27-30 as best understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke et al (US 5,211,327) as modified by Brenner et al (US 6,365,866) and Araki et al (US 4,020,312) and in further view of Kehrer (US 2004/0136776).

Art Unit: 3742

The teachings of Clarke as modified by Brenner and Araki have been discussed above. Clarke as modified by Brenner and Araki fails to disclose regarding claims 27 and 28 a vehicle comprising an engine with a drive system, wherein the drive system includes components for torque transmission, and at least two components have been welded to one another by a process according to Claim 2, 18. Clarke as modified by Brenner and Araki fails to disclose regarding claims regarding claims 29, 30, a vehicle comprising at least two components made from hardenable steel and connected by a join comprising a weld seam produced by a process according to Claim 2, 18. Kehrner discloses regarding claims 27-30, Paragraph [0002] states the parts being welded may be part of a vehicle such as a transmission with two parts being welded together. Paragraph [0011] discloses these parts made from hardenable steel may be joined by plasma welding. It would have been obvious to adapt modified Clarke in view of Kehrner to provide the two components joined by a plasma welding process since Kehrner discloses that two hardenable steel parts of a vehicle or transmission may be welded using a plasma welding process for improved thermal and metallurgical properties of the weld seam.

Response to Arguments

5. Applicant's arguments with respect to claims 2, 14, 16, 18 and 20-30 have been considered but are moot in view of the new ground(s) of rejection.

The energy per unit length is addressed in the new rejection by Araki et al. An energy per unit length of 196 J/mm as stated by applicant meaning $1\text{ kW/mm} = 42.66\text{ J/mm}$.

Art Unit: 3742

Araki et al teaches a welding current of 1500A and an arc voltage 36V for a power of 54kW for an energy per unit length of 1265 J/mm. Regarding applicant's arguments on page 7 of the reply, Fig 4 shows the steel being melted to slot 126 which covers the entire thickness of the material. Regarding applicant's arguments of the preheat cycle, the preheat is performed before the actual plasma arc welding therefore no secondary heating is performed since heating does not occur after the arc welding process.

6. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN JENNISON whose telephone number is (571)270-5930. The examiner can normally be reached on M-Th 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3742

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN JENNISON/
Examiner, Art Unit 3742

6/28/2010
/TU B HOANG/
Supervisory Patent Examiner, Art Unit 3742